

Advanced C Programming And It's Application

Final Project Introduction & Brainstorming

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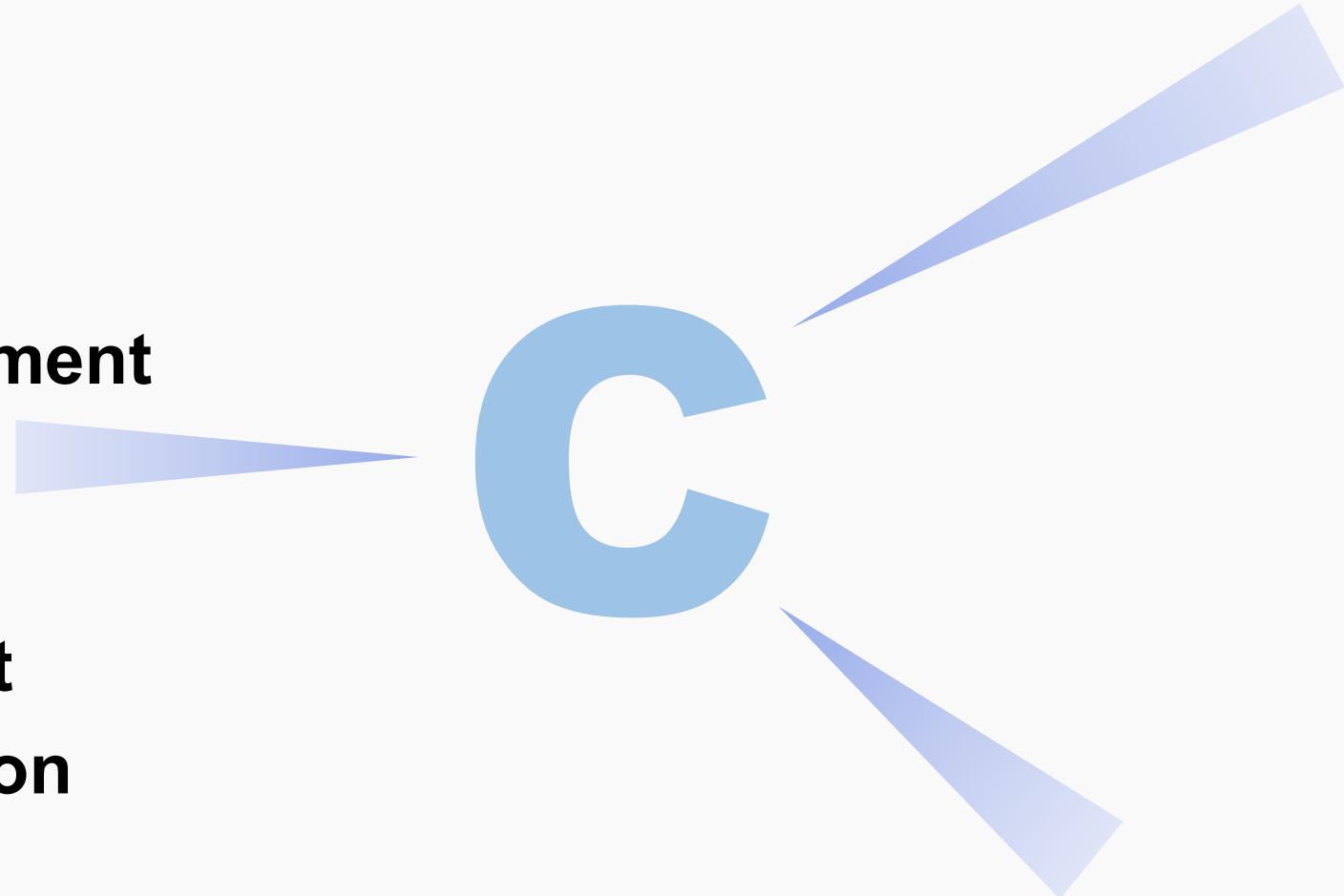
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Nov. 24, 2021

<Outline>

大綱

- [1] Final Project
- [2] Brainstorming
- [3] Project Management
- [4] Story Telling
- [5] Presentation
- [6] Progress Report
- [7] Final Presentation
- [8] References



期末專題

期末專題展演是一個讓大家練習如何呈現自己的舞台，所謂的資料科學不應止於資料分析技術本身以及資料的詮釋，而是應該要充分將其包裝成一個有意義的故事，利用適當的方式展演出來。

期末專題的重點：

1. 資料分析
2. 結果呈現
3. 成果展演

Brainstorming

brainstorming noun

 Save Word

brain·storm·ing | \ 'brān-,stōr-mīng \

plural **brainstormings**

Definition of *brainstorming*

: a group problem-solving technique that involves the spontaneous contribution of ideas from all members of the group

// conducted several *brainstorming* sessions

also : the mulling over of ideas by one or more individuals in an attempt to devise or find a solution to a problem

// ... he's already done some *brainstorming* about new marketing strategies.

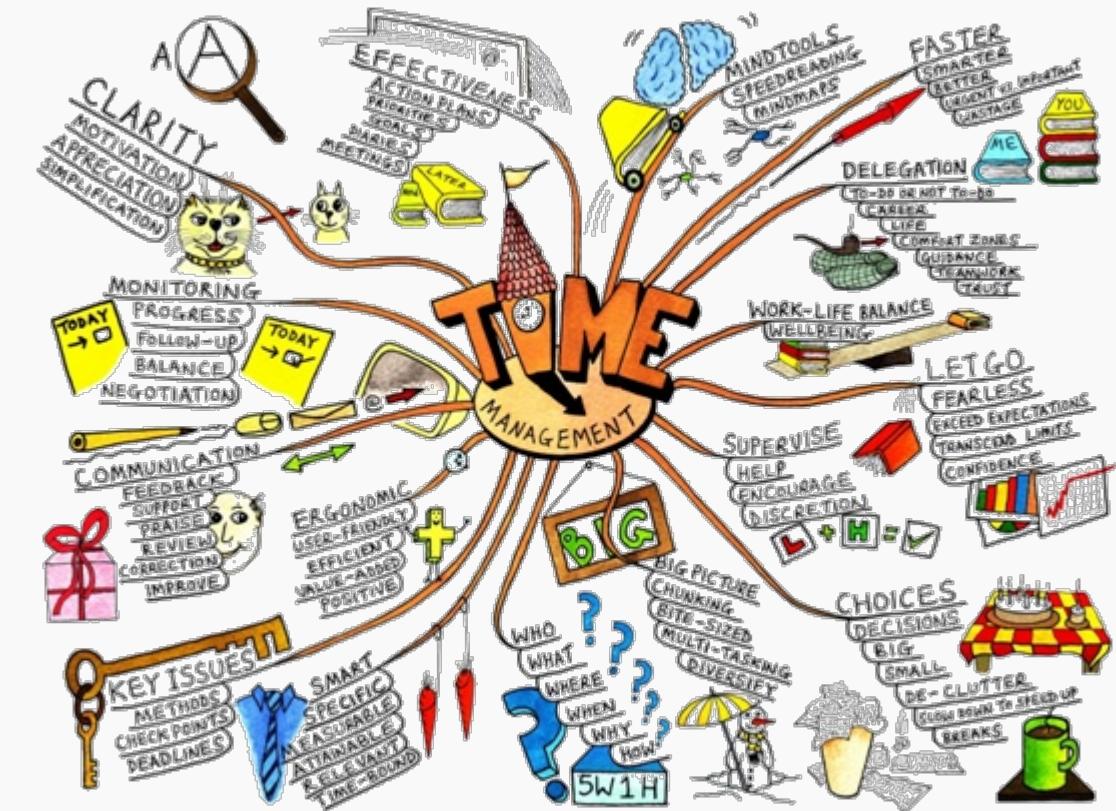
— George Lazarus

A definition from Merriam-Webster.

Brainstorming

Brainstorming

- Group problem solving
- Spontaneous contribution
- Finding a solution or a series of solutions



Ref: <https://3.bp.blogspot.com/xWAOQ6L9t9A/UXuBojpSHtI/AAAAAAAFA/f7wz6w3x-gw/s1600/%E8%85%A6%E5%8A%9B%E6%BF%80%E7%9B%AA%E6%B3%95.jpg>

Brainstorming – To be honest...

Before everything, you need to think about the project topic and what kind of problem you want to solve!



Brainstorming – To be honest...

Usually, we just call team members to a restaurant or coffee, and have a serious discussion...



Photo credit: <https://www.chronicle.com/article/the-holy-grail-of-class-discussion/>

Brainstorming – To be honest...

In fact, you (team leader) ask your team member, “Do you have any idea for the final project?”



Photo credit: [https://www.kindpng.com/imgv/TbmRTwh
medical-card-icon-doctor-group-discussion-icon-hd/](https://www.kindpng.com/imgv/TbmRTwh_medical-card-icon-doctor-group-discussion-icon-hd/)



Photo credit: [https://www.everypixel.com/image-183
67140570027620099](https://www.everypixel.com/image-183_67140570027620099)

I am pretty sure that the answer is **NO**.

Don't you think this discussion is totally useless?

Brainstorming – Discussion

Brainstorming is just a kind of discussion ...

So, let's talk about the DISCUSSION!

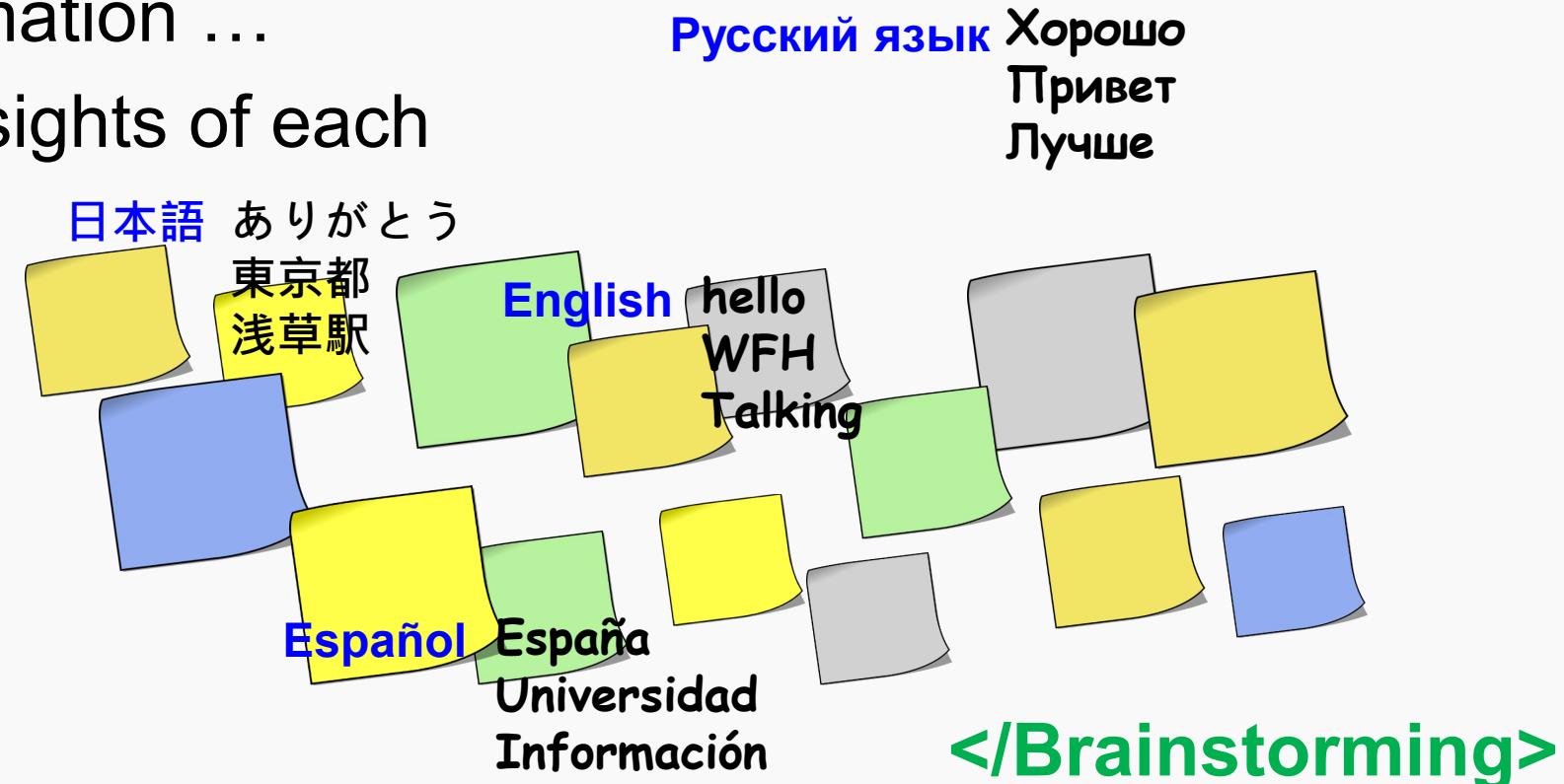
Discussion is used to:

- (1) Exchange opinions, ideas, and suggestions...
- (2) Make a decision...
- (3) Be time-efficient

Brainstorming – Preparation

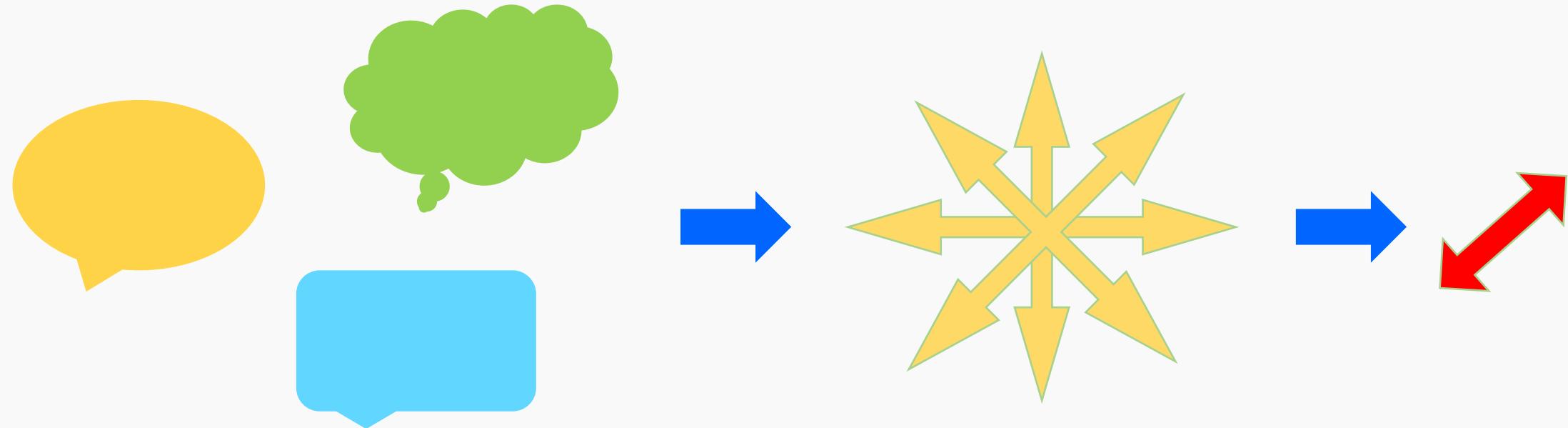
- For a formal discussion, we therefore need to **search** lots of references, information, and related articles ...
- **Categorize** all information ...
- **Write or note** the insights of each
- **Summary** for each

عربي شكرًا
أهلا بك جمل



Brainstorming – Exchange Ideas & Narrow down

Second, how can we make a decision?



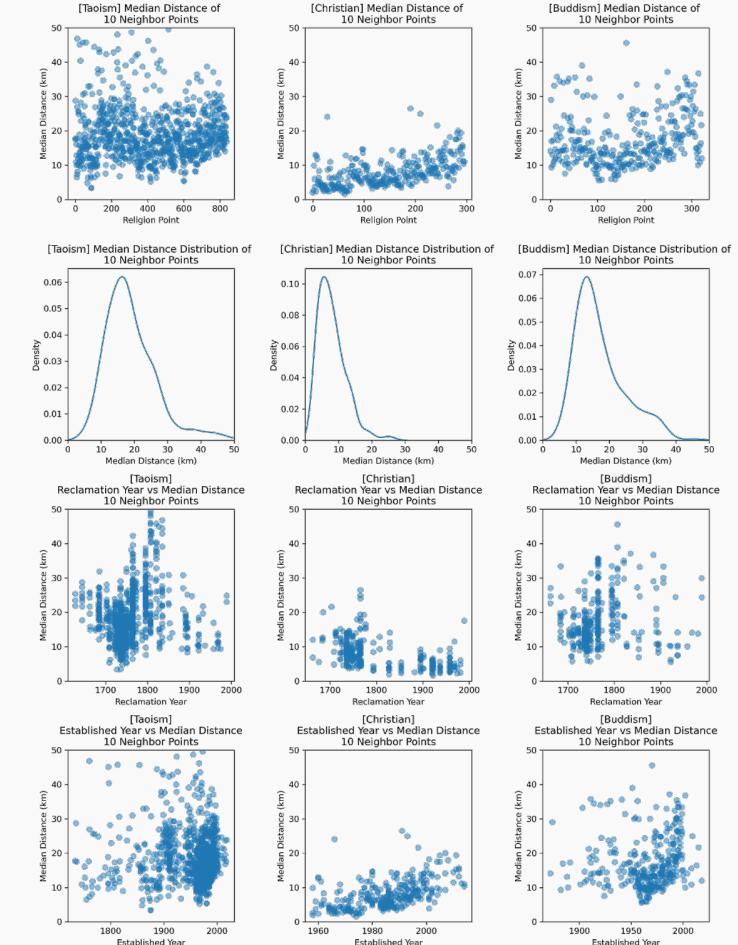
<Brainstorming/>

Brainstorming – Pilot Study

Third, do something with your data?

In Data Science, we call this step as “**Data Explore**”, which is used to observe the distribution or characteristics of your dataset.

Next step, you might know which way is the best choice!



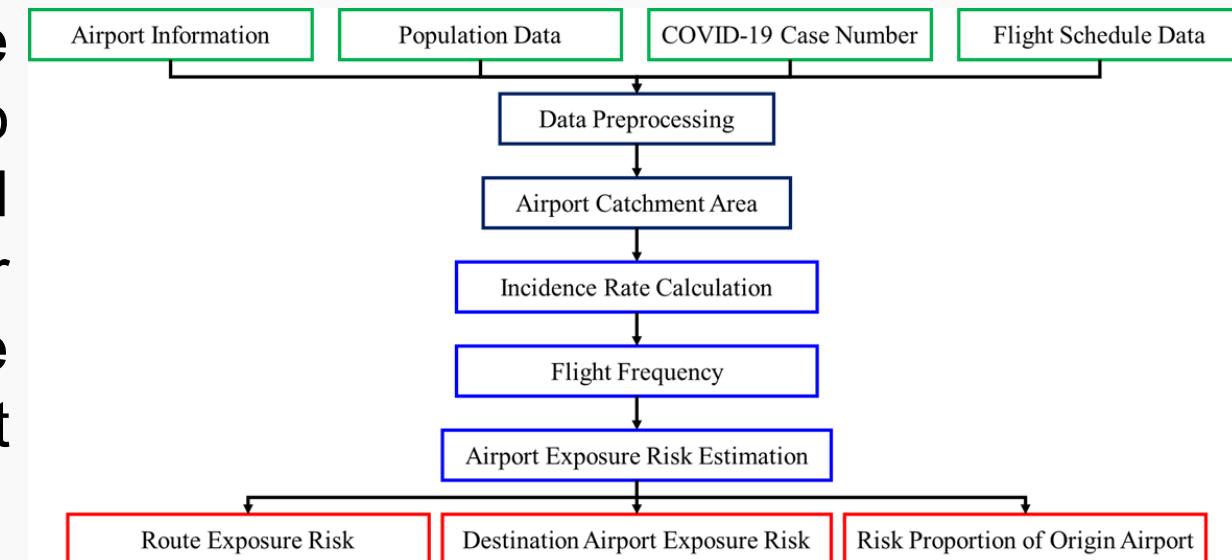
Project Management

- Project Management, literally, it means that you need to figure out a way to manage your project.
- Speaking of management, it is not only push you to do something; more deeper, you need to control the process and schedule your time with team members.
- I therefore provide some interesting tools to help you control your project with team members.

Project Management – Flow Chart

- The term, flow chart, represents that you need to visualize the step-by-step workflow of the project into a figure.

As shown in the figure, we categorized our works into several blocks, and used arrows to link each other orderly. Moreover, we may use different colors to highlight different part.



Project Management – Gantt Chart

- Gantt Chart are always adopted for progress visualization and control tool.
- You can set a deadline for each step (according to your flow chart) and constantly check the progress on a regular basis.
- For some reasons, you may need to modify the deadline or content of certain steps.
- As a result, the extra time is required for you to adjust or reschedule the progress.

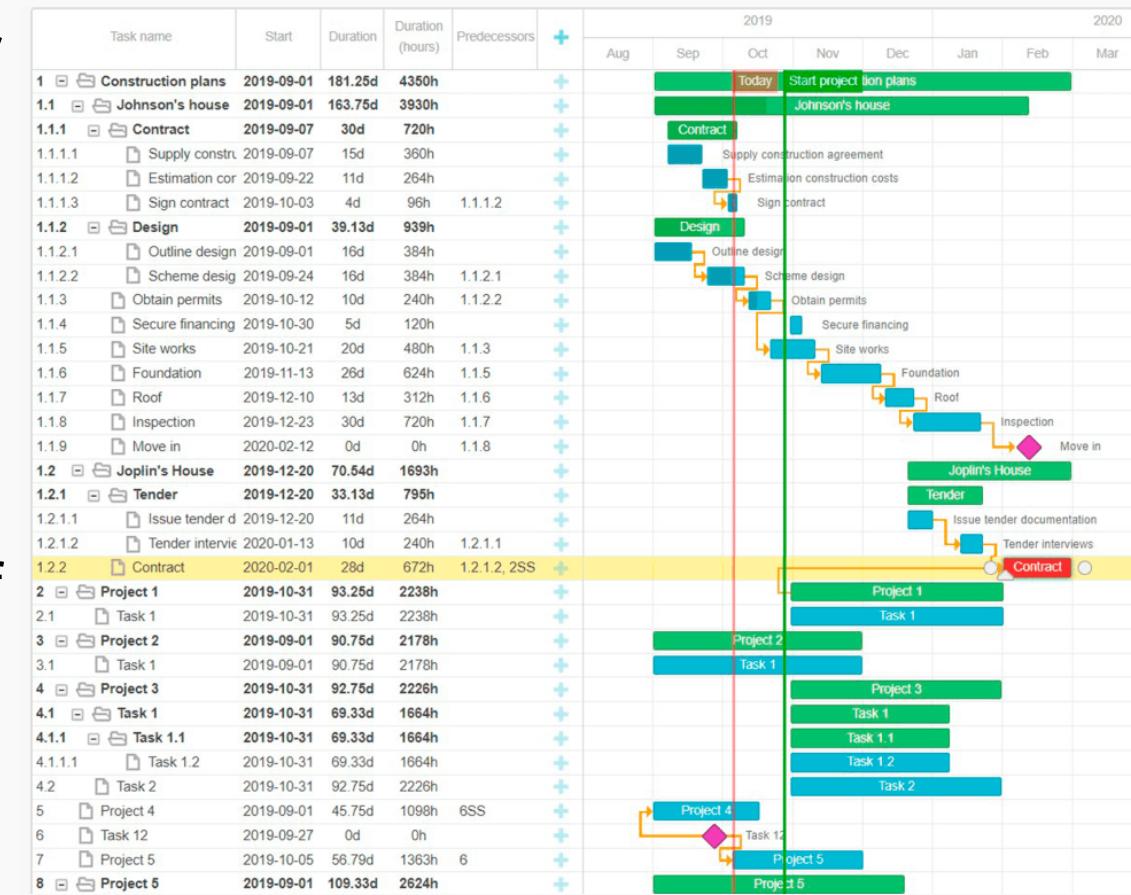


Photo credit: <https://dhtmlx.com/docs/products/dhtmlxGantt/>

Project Management – Gantt Chart

Gantt charts for powerful project plans.
Schedule, manage dependencies, and prioritize anything into an elegant project timeline.

I came for the Gantt, stayed for everything else!

Get Started FREE FOREVER NO CREDIT CARD.

Who said a Gantt chart can't be beautiful?

Link

Get a top-rated gantt chart for free, forever.

Discover why companies like **Amazon, Netflix, Nike, and Intuit** manage their projects with TeamGantt.

Get a FREE account
No credit card required

<https://www.teammgantt.com/>

Celebrate the holidays with our seasonal templates. DOWNLOAD THE TEMPLATES NOW. >

Templates / Charts / Simple Gantt Chart

Simple Gantt Chart

Create a project schedule and track your progress with this Gantt chart template in Excel. The professional-looking Gantt chart is provided by Vertex42.com, a leading designer of Excel spreadsheets. The Excel Gantt chart template breaks down a project by phase and task, noting who's responsible, task start and end date, and percent completed. Share the Gantt chart in Excel with your project team to review and edit collaboratively. This Gantt chart template is ideal for business plans, project management, student assignments, or even home remodels.

Excel

Download

Link

2021/11/03

Present your data in a Gantt chart in Excel

Excel for Microsoft 365, Excel for Microsoft 365 for Mac, Excel 2021, Excel 2021 for Mac. [More...](#)

A Gantt chart helps you schedule your project tasks and then helps you track your progress.

Windows **MacOS**

Need to show status for a simple project schedule with a Gantt chart? Though Excel doesn't have a predefined Gantt chart type, you can create one using this free template: [Gantt project planner template for Excel](#)

MS Excel

You can find several free tools on the internet, or you can just draw by yourself!

Story Telling

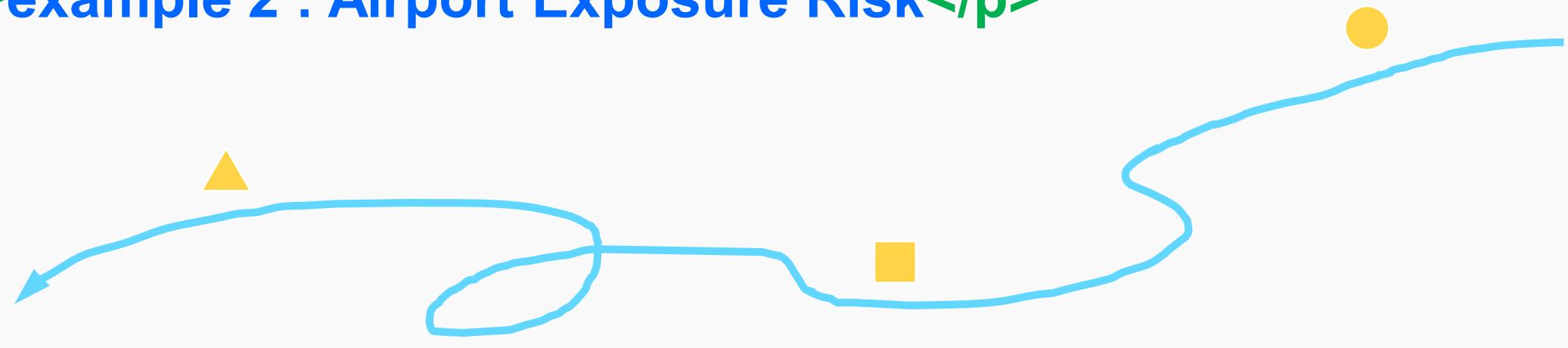
- We usually say someone has a good presentation skill, but how to qualitatively describe this?
- Maybe using the term “**presentation skill**” is the way to formal, so I just conduct another term, that is, “**story telling**”.
- When you are telling a story, you need to have a **background**, a **protagonist**, and a few **supporting roles**.
- The most important thing is that you have to describe the relationship between these people logically, so that the story can be connected.
- We call it the **context**!

Story Telling

Here I will show you two examples ...

<p>example 1 : my Ph.D. Dissertation</p>

<p>example 2 : Airport Exposure Risk</p>



Presentation

Speaking of presentations, making a beautiful deck is crucial to taking your work hard to the next level.

<Hint>

- **Clearness** → word count, font size, font family, font weight, ...
- **Contextual content** → Continuity, logic, ...
- **Visualization** → chart, icon, figure, ...

</Hint>

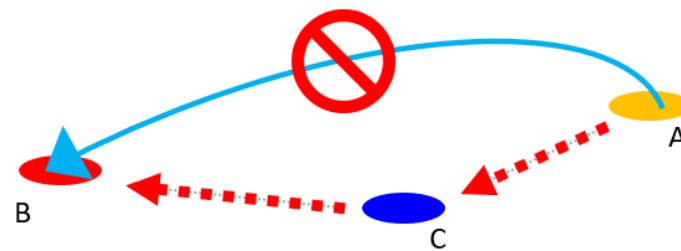
Presentation – Clearness



The importance of network indicators on epidemic transmission

- Many studies adopted social distance to measure epidemic transmissions, such as degree centrality, PageRank, and betweenness, closeness.

Marcelino and Kaiser (2012) simulated the flight cancellation on the particular airports to reduce the contagion risk.



Betweenness centrality more efficiently performed the **transferring-activity** differences after intervention
Two types of differences are detected: provinces with **increasing and decreasing** transferring activities.

We further illustrated the **relationship between the number of infected cases and contagion-related parameters in the real situation.**

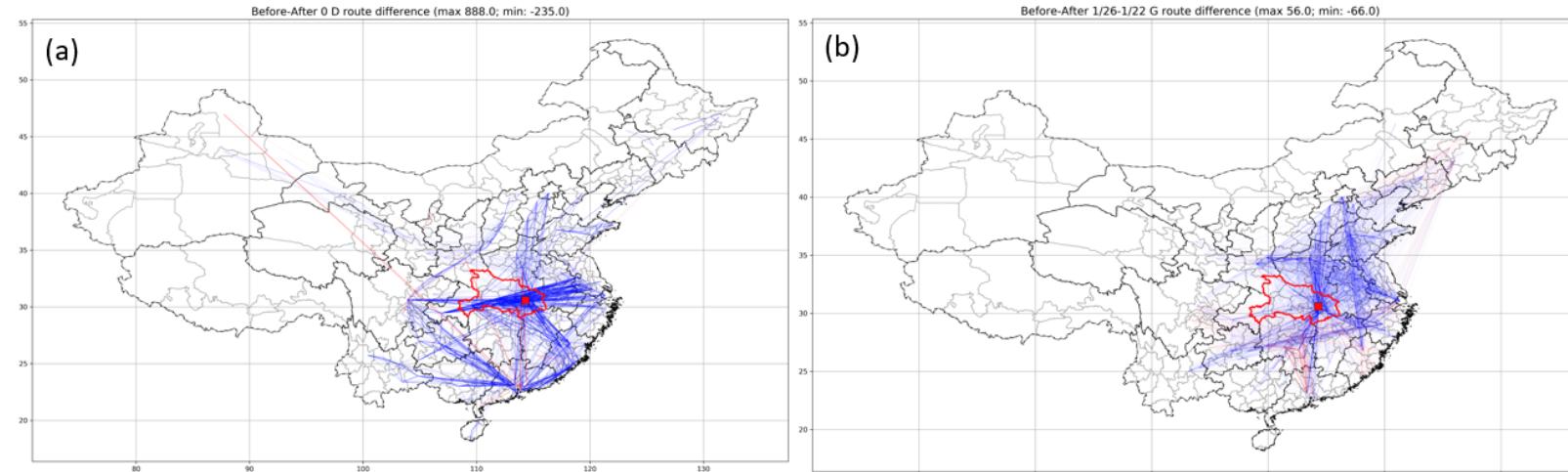
The **transferring activities** show a positive correlation to the **infection risk**.

Presentation – Clearness



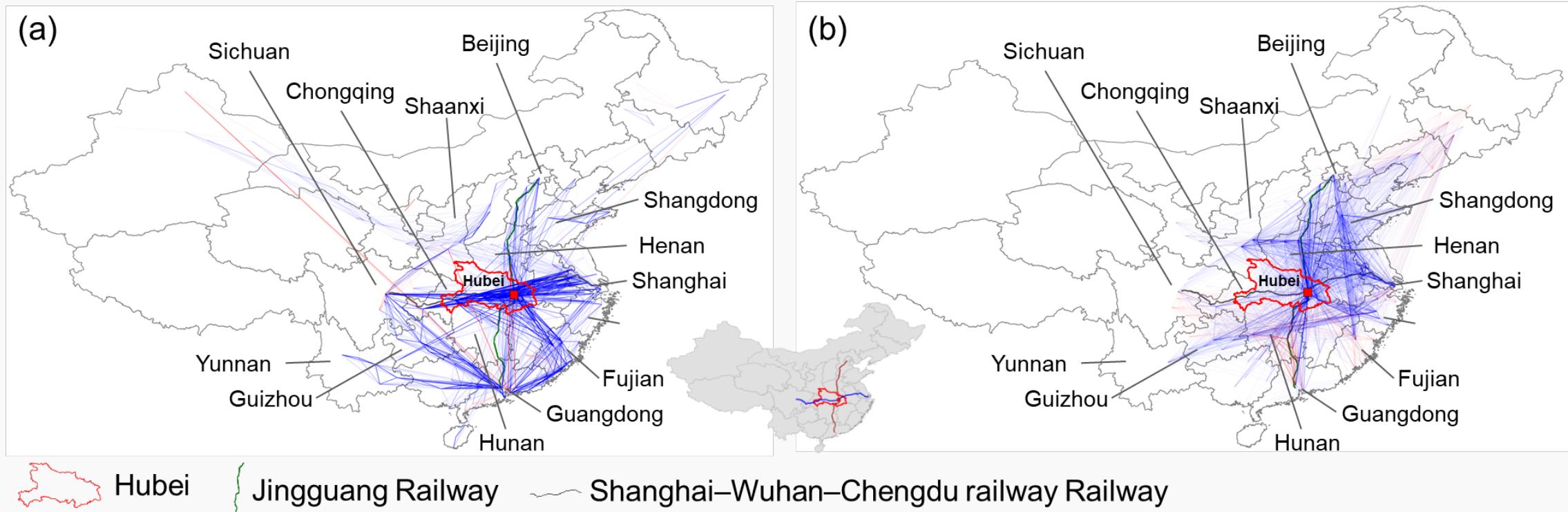
Differences of rail transport before/after Wuhan/Hubei city lockdowns

- The changes of intercity rail itineraries



The changes of city OD itinerary after a series of city lockdown. City OD itinerary: (a) D-series High-Speed Train; (b) G-series High-Speed Train.

Presentation – Clearness



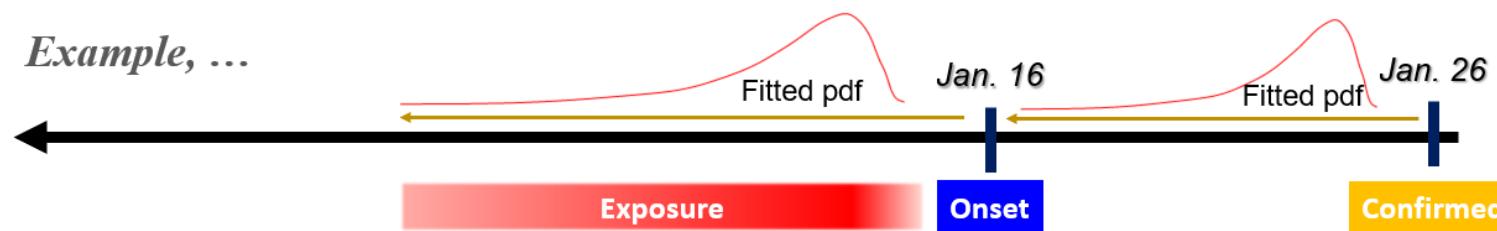
Presentation – Contextual



Data :: COVID-19 cases

- The probability estimation has two parts:
- Incubation estimation and hospitalization estimation.

Example, ...



Based on the NEJM OA paper^[1], the time period between the peak infection to onset date is approximately 5.2 days.

Based on the JAMA paper^[2], the time period between the peak onset to confirmed date is approximately 9 days.

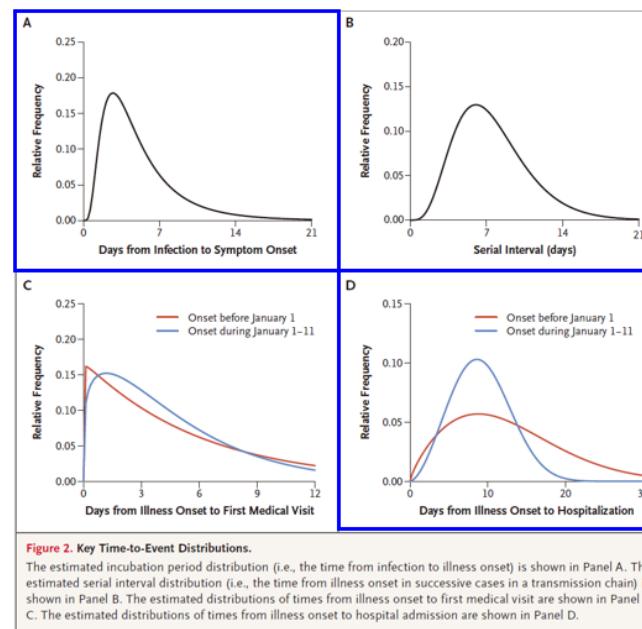
[1] Wu, Z., & McGoogan, J. M. (2020). Characteristics of and important lessons from the coronavirus disease 2019 (COVID-19) outbreak in China: summary of a report of 72 314 cases from the Chinese Center for Disease Control and Prevention. *Jama*.

<Present>

Presentation – Contextual

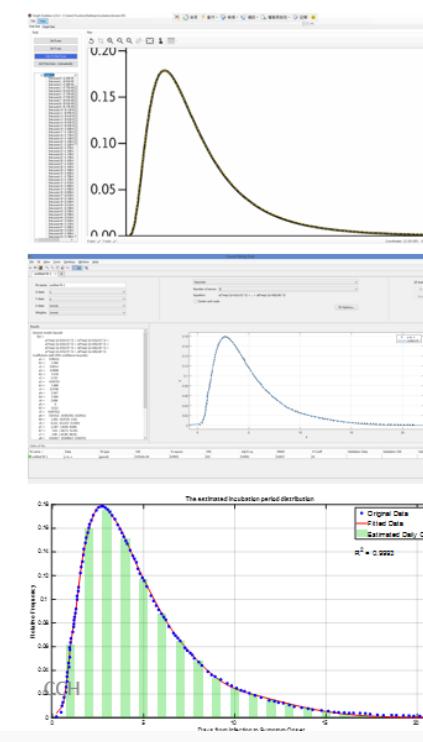


Data :: COVID-19 cases



2020/3/27

2021/11/03



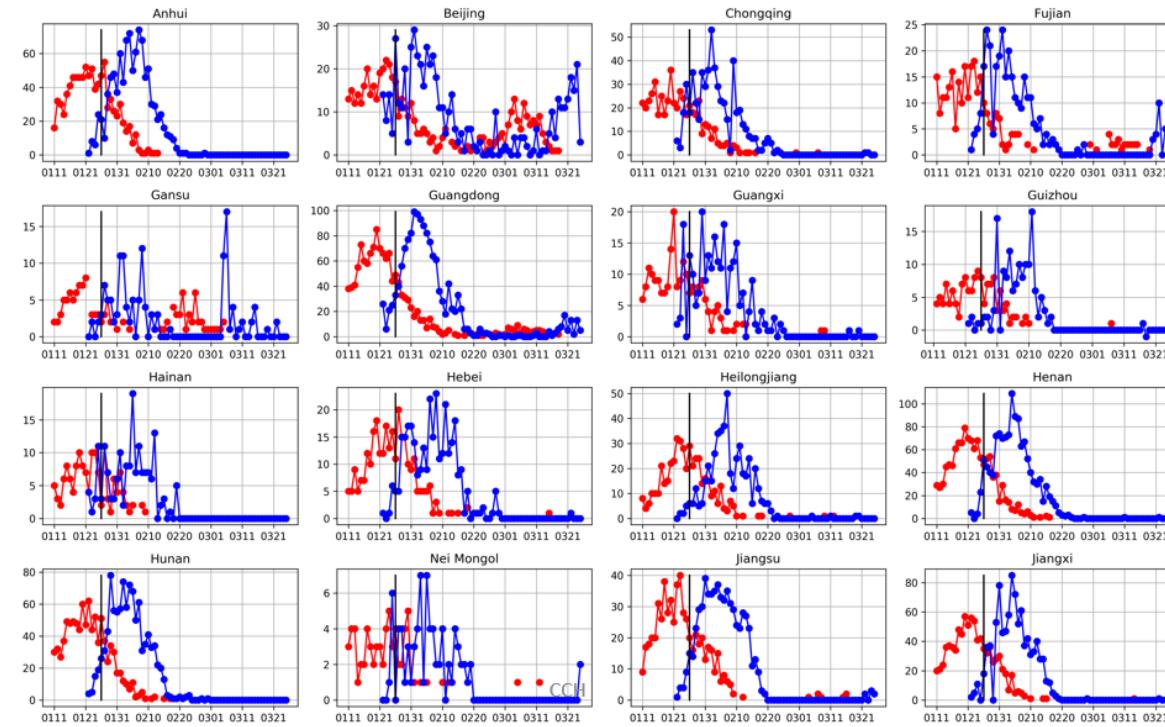
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Presentation – Contextual



Data :: Infected date est.

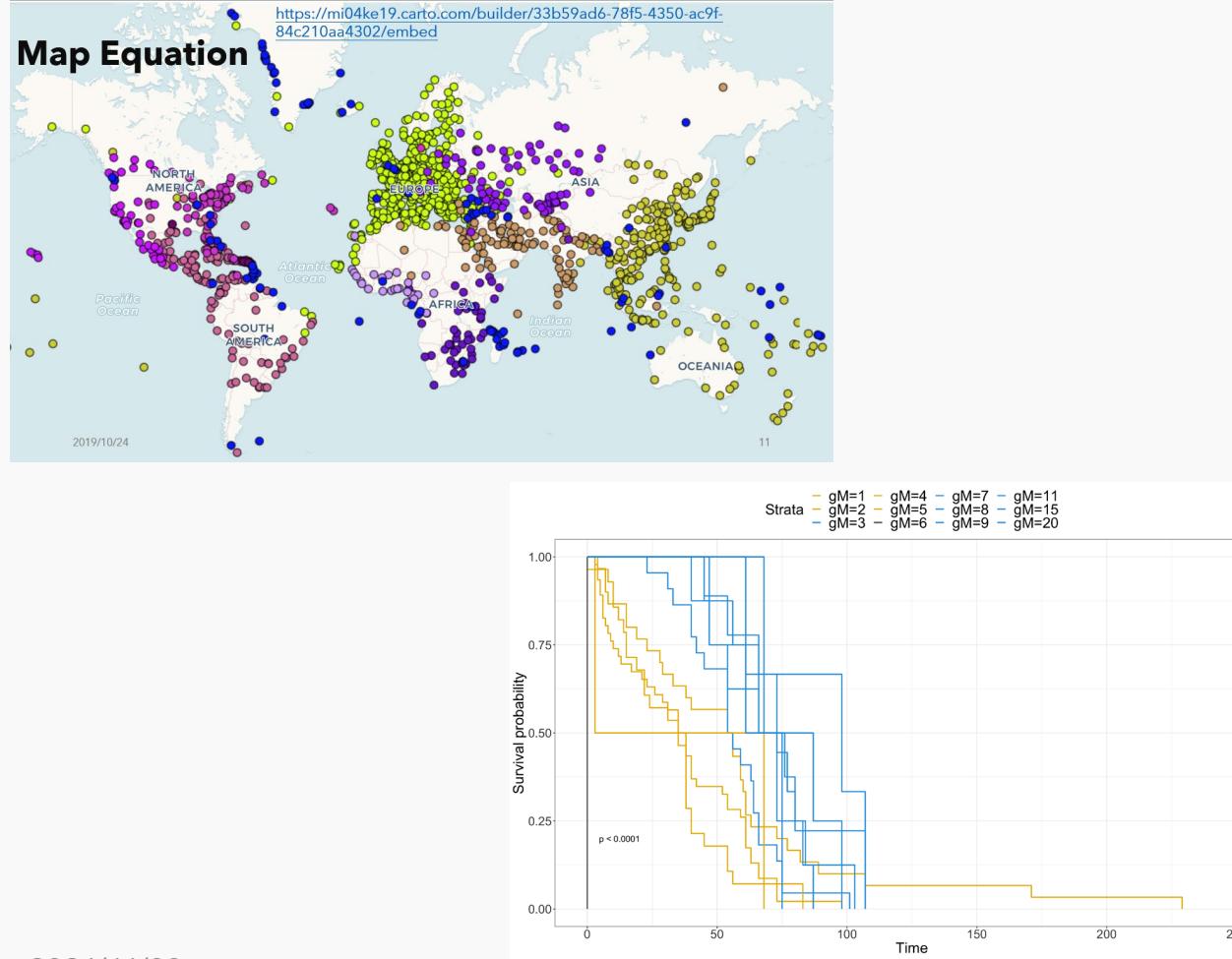


2020/3/27

2021/11/03

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Presentation – Visualization



2021/11/03

	ClusterCoefG	ClusterCoef	P_coef	PageRank	Between	Close	GDPcapita	Population	touristArrival	LifeExpectYears	TradeOfGDP	Dist
ClusterCoefG	1.00	0.11	-0.27	0.21	0.11	0.17	0.14	0.12	-0.02	0.01	0.11	0.05
ClusterCoef	0.11	1.00	-0.02	-0.34	-0.17	-0.21	-0.31	0.04	-0.16	-0.13	-0.14	0.18
P_coef	-0.27	-0.02	1.00	0.17	0.06	0.35	0.04	0.13	0.17	-0.02	-0.15	-0.24
PageRank	0.21	-0.34	0.17	1.00	0.43	0.74	0.48	0.10	0.56	0.38	0.22	-0.17
Between	0.11	-0.17	0.06	0.43	1.00	0.49	0.31	-0.03	0.19	0.32	0.03	-0.11
Close	0.17	-0.21	0.35	0.74	0.49	1.00	0.53	0.14	0.50	0.43	0.05	-0.31
GDPcapita	0.14	-0.31	0.04	0.48	0.31	0.53	1.00	-0.11	0.22	0.56	0.25	-0.12
Population	0.12	0.04	0.13	0.10	-0.03	0.14	-0.11	1.00	0.36	-0.06	-0.20	-0.10
touristArrival	-0.02	-0.16	0.17	0.56	0.19	0.50	0.22	0.36	1.00	0.29	-0.13	-0.16
LifeExpectYears	0.01	-0.13	-0.02	0.38	0.32	0.43	0.56	-0.06	0.29	1.00	0.19	0.12
TradeOfGDP	0.11	-0.14	-0.15	0.22	0.03	0.05	0.25	-0.20	-0.13	0.19	1.00	0.03
Dist	0.05	0.18	-0.24	-0.17	-0.11	-0.31	-0.12	-0.10	-0.16	0.12	0.03	1.00

Progress Report

進度報告大約有三次：

→第一次報告

1. 主題發想
2. 為甚麼要做這個？
3. 預計怎麼做？
4. 預期成果？

→第二次報告

→第三次報告

4人一組 → 5組 → 進度報告每組6分鐘

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<Syllabus/>

課程大綱

- | | |
|---|--|
| W1 0922 Introduction | W11 1201 File Processing |
| W2 0929 Review: C Variables & Loop | W12 1208 String I* |
| W3 1006 Review: C Condition & Array | W13 1215 String II* |
| W4 1013 Function - Basic | W14 1222 Dynamic memory allocation |
| W5 1020 Function - Advance | W15 1229 Struct and Final Project Preparation* |
| W6 1027 Pointer I | W16 0105 Final Project Presentation |
| W7 1103 Pointer II | W17 0112 Holiday |
| W8 1110 Pointer III | |
| W9 1117 Mid-term Exam | |
| W10 1124 Final Project Introduction & Brainstorming | |

有標註*為進度報告的週次

2021/09/22

</Syllabus>

Progress Report

進度報告大約有三次：

→第一次報告

→第二次報告

1. 進度表
2. 已完成的部分
3. 尚未完成的部分
4. 修正或是遇到困難的地方

→第三次報告

4人一組 → 5組 → 進度報告每組6分鐘

14

<Syllabus/>

課程大綱

- | | |
|---|--|
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| W10 1124 Final Project Introduction & Brainstorming | |

有標註*為進度報告的週次

2021/09/22

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Progress Report

進度報告大約有三次：

- 第一次報告
- 第二次報告
- 第三次報告

1. 進度表
2. 完成事項
3. 初步成果呈現
4. 尚未完成的地方

4人一組 → 5組 → 進度報告每組6分鐘

14

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課程大綱

- | | |
|---|--|
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| W10 1124 Final Project Introduction & Brainstorming | |

有標註*為進度報告的週次

2021/09/22

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Final Presentation

期末報告每組**10分鐘**，必須包含的內容有：

- (1) 主題發想
- (2) 動機與目的
- (3) 構想與流程
- (4) 結果呈現 (live demo)
- (5) 程式碼展演 (code review)
- (6) 分工表

成績計算方式

- a) 主題製作完整性: 20%
 - b) 難度: 30%
 - c) 報告呈現: 20%
 - d) 互評成績: 30%
- [小組: 10% ; 組間: 20%]

Final Presentation

各組在教室一區設立一攤位demo自己的東西，給其他人玩玩看或是使用一下！

每個人都要去每一組攤位進行評分，作為小組的組間成績！
同時獲得第一名的小組，另外可以得到獎賞（構思中...）。

References

- Chan, C. H., & Wen, T. H. (2021). Revisiting the Effects of High-Speed Railway Transfers in the Early COVID-19 Cross-Province Transmission in Mainland China. *International Journal of Environmental Research and Public Health*, 18(12), 6394.**
[Q1 76.42% 42/176; IF: 3.390] [<https://doi.org/10.3390/ijerph18126394>]
- Chan, C. H., Wu, R. G., & Shao, Y. Y. (2021). The effects of ultrasonic treatment on physicochemical properties and in vitro digestibility of semigelatinized high amylose maize starch. *Food Hydrocolloids*, 119, 106831.**
[Q1 96.85% 5/143; IF: 9.147] [<https://doi.org/10.1016/j.foodhyd.2021.106831>]
- Chan, C. H., Chu, T. H., Wu, J. H. P., & Wen, T. H. (2021). Spatially Characterizing Major Airline Alliances: A Network Analysis. *ISPRS International Journal of Geo-Information*, 10(1), 37.**
[Q2 55.00% 23/50; IF: 2.899] [<https://doi.org/10.3390/ijgi10010037>]

Find your team members

If you want to have some fresh or even unprecedented ideas, and then I will give you a suggestion ...



I hope you can find someone who is not from the same department as you!

